

Fig. 1

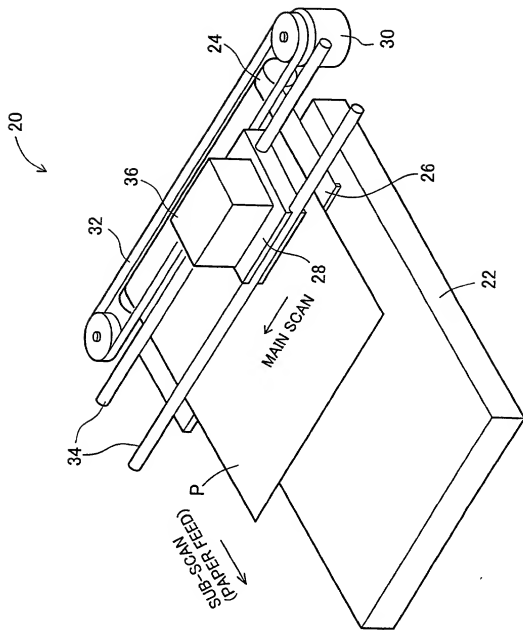


Fig. 2

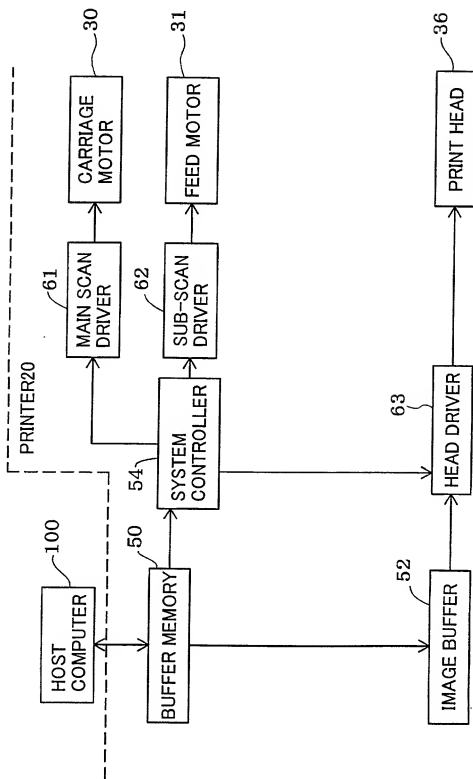


Fig. 3

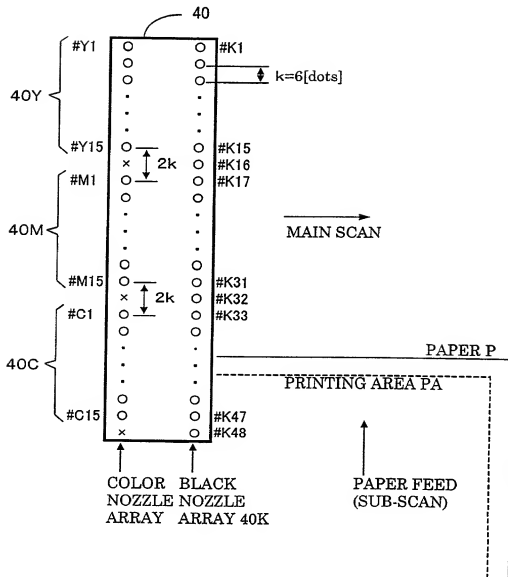


Fig. 4 (A) CONCEPT OF SUB-SCAN FEED($s=1$)

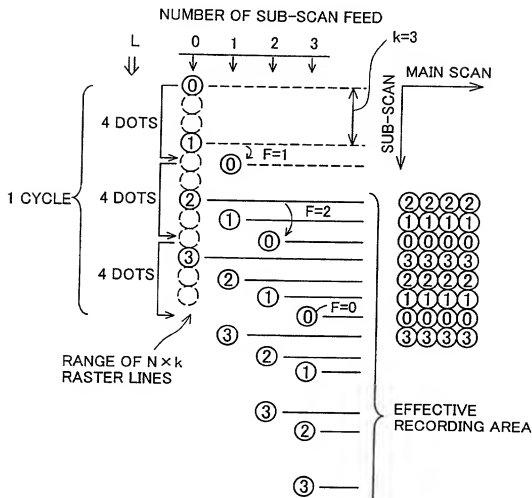


Fig. 4 (B) PARAMETERS

NOZZLE PITCH k : 3 [dot]
 NUMBER OF USED NOZZLES N : 4
 NUMBER OF SCAN REPEATS s : 1
 NUMBER OF EFFECTIVE NOZZLES N_{eff} : 4

NUMBER OF SUB-SCAN FEED	0	1	2	3
FEED AMOUNT L [dot]	0	4	4	4
ΣL	0	4	8	12
$F = (\Sigma L) \% k$	0	1	2	0

Fig. 5 (A) CONCEPT OF SUB-SCAN FEED($s=2$)

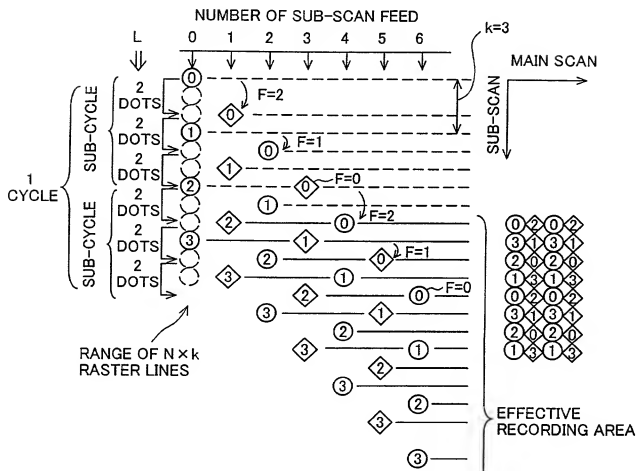


Fig. 5 (B) PARAMETERS

NOZZLE PITCH k : 3 [dot]
 NUMBER OF USED NOZZLES N : 4
 NUMBER OF SCAN REPEATS s : 2
 NUMBER OF EFFECTIVE NOZZLES N_{eff} : 2

NUMBER OF SUB-SCAN FEED	0	1	2	3	4	5	6
FEED AMOUNT L [dot]	0	2	2	2	2	2	2
$\sum L$	0	2	4	6	8	10	12
$F = (\sum L) \% k$	0	2	1	0	2	1	0

Fig. 6

SCAN PARAMETERS IN FIRST EMBODIMENT

Nozzle pitch : $k = 6$ [dots]

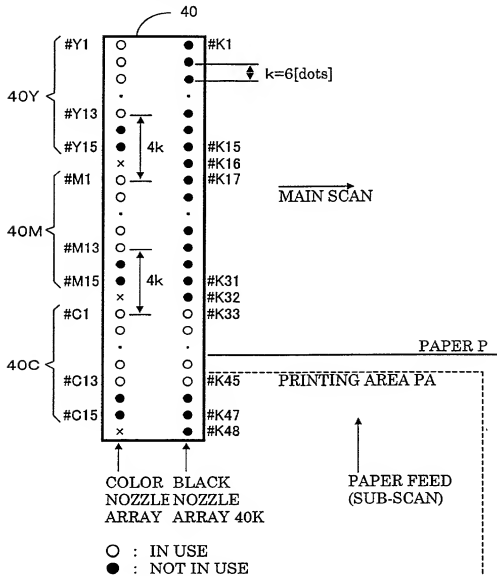
Number of scan repeats : $s = 1$

Number of working nozzles : $N = 13$

Number of effective nozzles : $N_{eff} = 13$

PASS No.	1	2	3	4	5	6	7
SUB-SCAN No.	0	1	2	3	4	5	6
FEED L [dots]	0	13	13	13	13	13	13
ΣL	0	13	26	39	52	65	78
$F=(\Sigma L)\%k$	0	1	2	3	4	5	0

WORKING NOZZLES IN FIRST EMBODIMENT



RASTER

LINE

No

No.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	C11						M14							M1					Y4	
2		C9							M12					M15						Y2
3			C7							M10						Y13				
4				C5							M8						Y11			
5					C3							M6						Y9		
6						C1							M4						Y7	Omis
7	C12						M13							M2					Y5	Mmis
8		C10						M13						x						Y3
9			C8						M11						M14					<u>Y1 Ymis</u>
10				C6						M9						Y12				
11					C4						M7						Y10			
12						C2						M5						Y8		Omis
13	C13						x							M3					Y6	
14		C11					M14								M1					Y4
15			C9						M12						M15					Mmis
16				C7						M10							Y13			Y2 Ymis
17					C5						M8						Y11			
18						C3						M6						Y9		
19	M14						C1						M4							
20		C12						M13						M2					Y7	
21			C10						M13						x				Y5	
22				C8						M11					M14					Y3
23					C6						M9						Y12			Y1
24						C4						M7						Y10		
25	M15						C2						M5						Y8	
26		C13						x						M3					Y6	
27			C11						M14						M1					Y4
28				C9						M12					M15					Y2
29					C7						M10						Y13			
30						C5						M8						Y11		
31							C3						M6						Y9	
32	M14							C1						M4					Y7	
33		C12							M13						M2					Y5
34			C10							M11						x				Y3
35				C8							M9					M14				
36					C6							M7					Y12			Y1
37						C4												Y10		
38	M15						C2							M5					Y8	
39		C13						x							M3					Y6

Fig. 9

WORKING NOZZLES IN FIRST COMPARATIVE EXAMPLE

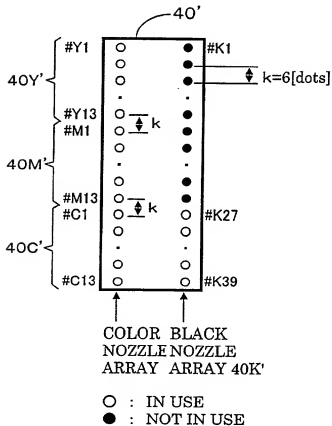


Fig. 10

FIRST COMPARATIVE EXAMPLE

RASTER

PASS No.

LINE

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	C11						M11						Y11						
2		C9						M9						Y9					
3			C7						M7						Y7				
4				C5						M5						Y5			
5					C3						M3						Y3		
6						C1						M1						Y1	Cmis, Mmis, Ymis
7	C12						M12						Y12						
8		C10						M10						Y10					
9			C8						M8						Y8				
10				C6						M6						Y6			
11					C4						M4						Y4		
12						C2						M2						Y2	Cmis, Mmis, Ymis
13	C13						M13						Y13						
14		C11						M11						Y11					
15			C9						M9						Y9				
16				C7						M7						Y7			
17					C5						M5						Y5		
18						C3						M3						Y3	
19							C1						M1						Y1
20		C12						M12						Y12					
21			C10						M10						Y10				
22				C8						M8						Y8			
23					C6						M6						Y6		
24						C4						M4						Y4	
25							C2						M2						Y2
26		C13						M13						Y13					
27			C11						M11						Y11				
28				C9						M9						Y9			
29					C7						M7						Y7		
30						C5						M5						Y5	
31							C3						M3						Y3
32								C1						M1					Y1
33		C12							M12						Y12				
34			C10							M10						Y10			
35				C8							M8						Y8		
36					C6							M6						Y6	
37						C4							M4						Y4
38							C2							M2					Y2
39		C13						M13							Y13				
40			C11						M11							Y11			

Fig. 11

EQUIVALENT NOZZLE POSITIONING

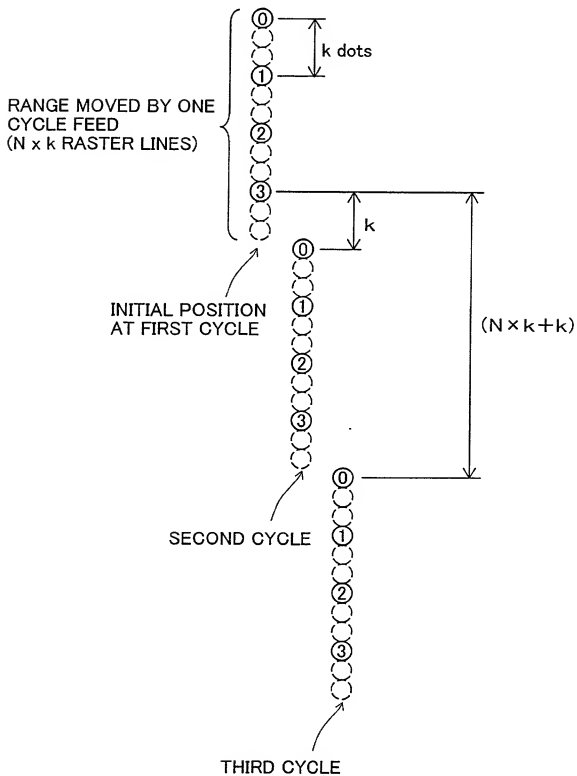


Fig. 12

SCAN PARAMETERS IN SECOND EMBODIMENT

Nozzle pitch : $k = 6$ [dots]

Number of scan repeats : $s = 1$

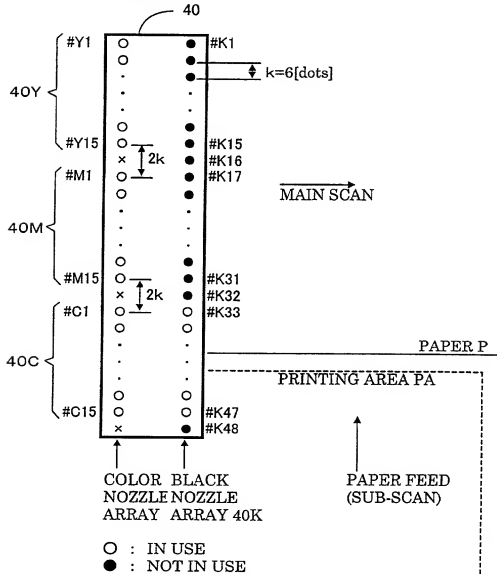
Number of working nozzles : $N = 15$

Number of effective nozzles : $N_{eff} = 15$

PASS No.	1	2	3	4	5	6	7
SUB-SCAN No	0	1	2	3	4	5	6
FEED L [dots]	0	14	15	16	16	15	14
ΣL	0	14	29	45	61	76	90
$F=(\Sigma L)\%k$	0	2	5	3	1	4	0

Fig. 13

WORKING NOZZLES IN SECOND EMBODIMENT



SECOND EMBODIMENT

PASS No. _____

No.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

[illegible]

Fig. 15

WORKING NOZZLES IN SECOND COMPARATIVE EXAMPLE

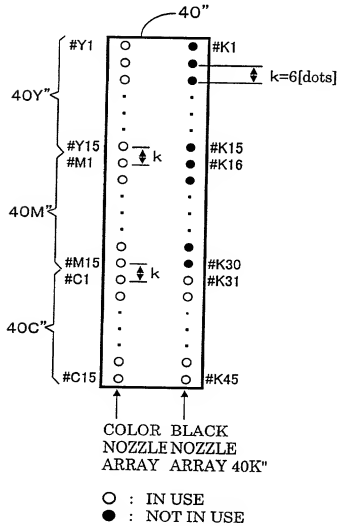


Fig. 16

SECOND COMPARATIVE EXAMPLE

RASTER

PASS No.

LINE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1			C8						M8						Y8				
2	C13					M13						Y13					Cmis, Mmis, Ymis		
3				C3						M3							Y3		
4		C11				M11						Y11							
5			C6						M6						Y6				
6					C1					M1							Y1		
7			C9						M9						Y9				
8	C14					M14						Y14					Cmis, Mmis, Ymis		
9				C4						M4						Y4			
10		C12				M12						Y12							
11			C7						M7						Y7				
12					C2						M2						Y2		
13			C10						M10						Y10				
14	C15					M15						Y15					Cmis, Mmis, Ymis		
15				C5						M5						Y5			
16		C13				M13						Y13							
17			C8						M8						Y8				
18				C3						M3							Y3		
19			C11			M11						Y11							
20					C1					M1							Y1		
21				C6						M6						Y6			
22						M14						Y14							
23			C9						M9						Y9				
24					C4					M4						Y4			
25			C12						M12					Y12					
26					C2						M2						Y2		
27				C7							M7					Y7			
28						M15						Y15							
29			C10						M10					Y10					
30				C5						M5						Y5			
31			C13						M13					Y13					
32					C3						M3						Y3		
33				C8						M8						Y8			
34						C1						M1						Y1	
35			C11						M11					Y11					
36					C6					M6						Y6			
37						M14						Y14							
38						C4					M4						Y4		
39				C9						M9						Y9			
40						C2						M2						Y2	

Fig. 17

FIRST ACTUATOR VARIATION

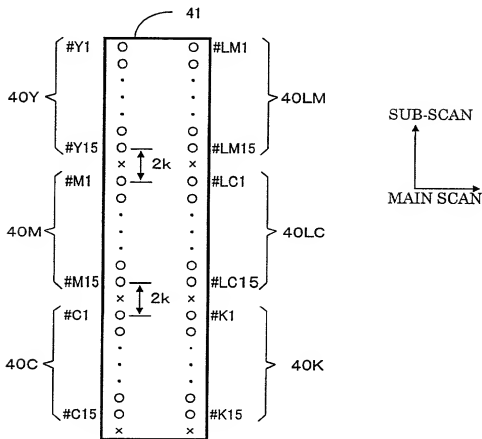
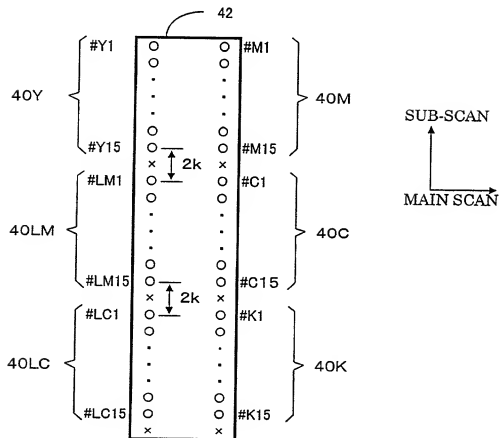


Fig. 18

SECOND ACTUATOR VARIATION

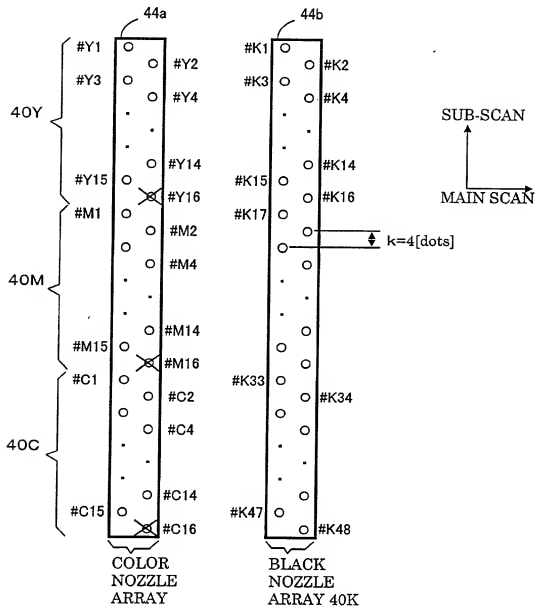


THIRD ACTUATOR VARIATION

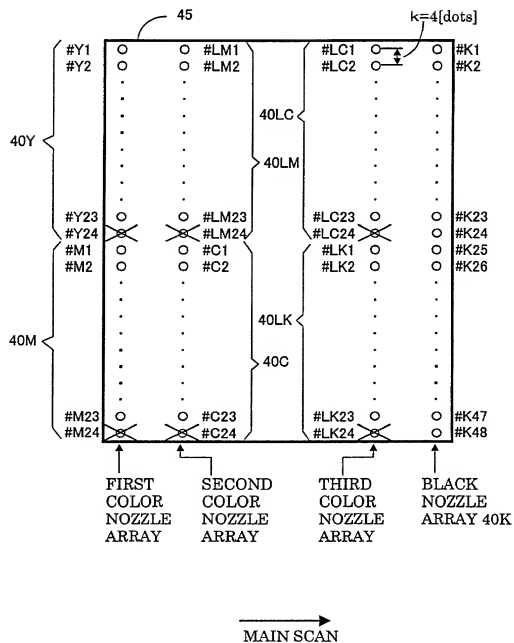


Fig. 20

FOURTH ACTUATOR VARIATION



FIFTH ACTUATOR VARIATION



SIXTH ACTUATOR VARIATION



Fig. 23

SEVENTH ACTUATOR VARIATION

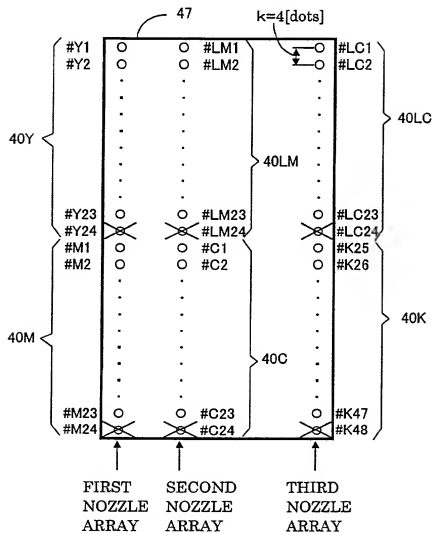


Fig. 24

EIGHTH ACTUATOR VARIATION

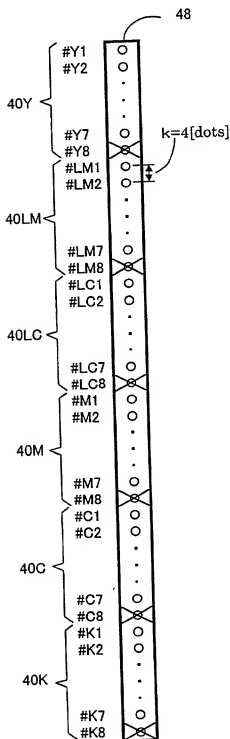


Fig. 25

INTERLACE SCHEME

NUMBER OF NOZZLES : $N = 3$
 NOZZLE PITCH : $K = 2$ [DOTS]
 NUMBER OF SCAN REPEATS : $s = 1$
 NOZZLE DENSITY : D [DOTS/INCH]
 SUB-SCANNING PITCH : L [INCH]
 DOT PITCH : w [INCH]

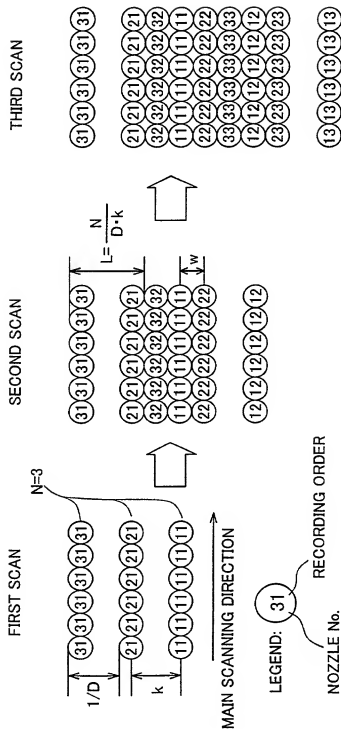


Fig. 26